Clean Version of the Entire Set of Pending Claim

1 1. A router comprising:

2 a) a first port for receiving a packet having a first label, a header and a payload;

3 b) a first table, from among one or more separate tables associated with
4 different labels, associated with the first label; and

5 c) a processor for processing the packet in accordance with the first table.

1 2. The router as recited by claim 1 wherein in the table is a route table.

1 3. The router as recited by claim 1 wherein the table is a forwarding table.

1 4. The router as recited by claim 1 wherein the label identifies a virtual private

2 network.

1 5. The router as recited by claim 1 further having a second port for

2 transmitting said packet.

1 6. The router as recited by claim 1 wherein the header is an internet protocol

2 header.

1 7. The router as recited by claim 1 wherein the label comprising information

2 identifying a virtual private network and a forwarding label.

1 8. A method of routing in a network comprising:

2 a) maintaining a first table corresponding to a first virtual private network;

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3   b)   maintaining a second table corresponding to a second virtual private network;

4   and

5   c)   routing a packet based on a pre-existing association with the first table or the

6   second table.

1   9.   The method as recited by claim 8 wherein the first table and the

2   second table are route tables.

1   10.   The method as recited by claim 8 wherein the first table and the

2   second table are forwarding tables.

1   11.   The method as recited by claim 9 further comprising the step of

2   maintaining forwarding table indexable by a virtual private network

3   identifier.

1   12.   The method as recited by claim 8 wherein the packet comprises a

2   label, a header and a payload.

1   13.   The method as recited by claim 8 wherein the label comprises

2   information identifying a virtual private network.

1   14.   The method as recited by claim 8 wherein the label comprises

2   information identifying a virtual private network and a forwarding label.

1   15.   The method as recited by claim 9 wherein the first table or the second

2   route table is chosen for routing the packet based on the label.

1 16. A method of routing in a network comprising:

2 a) maintaining a first forwarding table corresponding to a first virtual private network;

3 b) maintaining a second forwarding table corresponding to a second virtual private

4 network; and

5 c) routing a packet based on a pre-existing association with the first forwarding table

6 or the second forwarding table.

1 17. The method as recited by claim 16 wherein the packet comprises a label, a

2 header and a payload.

1 18. The method as recited by claim 16 wherein the label comprises

2 information identifying a virtual private network.

1 19. The method as recited by claim 16 wherein the label comprises

2 information identifying a virtual private network and a forwarding label.

1 20. The method as recited by claim 16 wherein the first table or the

2 second table is chosen for routing the packet based on the label.

1 21. A network comprising:

2 a) a first edge router configured to receive a packet having a header and to transmit

3 into a wide area network cloud a modified packet having a label and the header;

4 b) a backbone router configured to receive the modified packet and route the

5 modified packet based on a route table associated solely with the label, from among

6 one or more separate route tables associated with different labels; and

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7   c) a second edge router configured to receive the modified packet.

1   22.   The network as recited by claim 21 wherein the label comprises

2   information identifying a virtual private network.

1   23.   The network as recited by claim 21 wherein the label comprises

2   information identifying a virtual private network and a forwarding label.

1   24.   The network as recited by claim 21 wherein the backbone router comprises a

2   second route table.

1   25.   The network as recited by claim 21 wherein the modified packet further

2   includes,

3   a second label identifying a forwarding table corresponding to the virtual

4   private network, the forwarding table including a portion of the route table.

1   26.   A method of routing a packet comprising:

2   a)   identifying, by a label, a packet including the label, a header and a payload

3   destined for a virtual private network (VPN);

4   b)   identifying, from the label, a routing table associated with the VPN from

5   among multiple separate routing tables associated with different labels; and

6   c)   facilitating routing of the packet to the VPN.

1   27.   The method of claim 26, wherein the label includes a virtual private network

2   Identifier.

1 28. The method of claim 26, wherein the routing of the packet is based on

2 information in the header.

1 29. The method of claim 28 further comprising:

2   identifying, from a second label, a forwarding table corresponding to the VPN,

3   the forwarding table including a portion of the routing table.

1 30. The method of claim 29 further comprising:

2   identifying, from the forwarding table, label switching information for routing

3   the packet to the VPN.

1 31. The method of claim 30, wherein routing of the packet is based on

2 information in the forwarding table.

1 32. The method of claim 26 wherein the label includes a forwarding label

2 corresponding to a forwarding table.